



MICRO

BKT Micro Data Centers MicroDC Modular Rack

A SECURE DATA CENTER IN A COMPACT FORM



Over 25 years of experience in delivering advanced solutions

We provide comprehensive IT infrastructure solutions – from enclosures and ICT cabinets, through structured cabling and power systems, to design support and installation



residential
buildings



office
buildings



industrial
facilities



government
institutions



financial
institutions



transport
management systems



healthcare
facilities



educational
institutions



sports and entertainment
venues

Our comprehensive range includes:

- ▶ BKT building data transmission systems
- ▶ integrated Data Center systems: 4CubeDC, MicroDC, ContainerDC
- ▶ precision cooling and environmental control systems
- ▶ power distribution and environmental monitoring systems
- ▶ cabinet/kiosk access control systems
- ▶ data center visualization systems
- ▶ technical consulting and design services
- ▶ outdoor telecom cabinets and enclosures
- ▶ complete fiber optic solutions for telecom operators

Additionally, thanks to our team of experienced engineers, we provide consulting and design documentation for Data Centers, including:

- ▶ site location
- ▶ architecture and construction
- ▶ power security
- ▶ air conditioning and ventilation
- ▶ electronic security and fire protection systems, automation and monitoring
- ▶ telecommunications and ICT systems



BKT Micro Data Centers

BKT MicroDC is a compact, self-contained data center that integrates all the key functionalities of a traditional server room into a single, space-efficient solution:

- ▶ computing power (servers, storage)
- ▶ network infrastructure
- ▶ power management and backup power systems (UPS)
- ▶ cooling (e.g. DX air conditioners, including FreeCooling, or CW – Chilled Water systems)
- ▶ environmental monitoring (temperature, humidity, leakage, etc.)
- ▶ physical security systems (access control, intrusion detection, video monitoring)
- ▶ fire protection system: early detection and suppression

Typical applications of BKT MicroDC

BKT MicroDC Modular Rack is an ideal solution for a wide range of industries and environments, including:

- ▶ small and medium-sized businesses (SMBs) requiring their own IT resources
- ▶ distributed branches of large enterprises
- ▶ industry: process management and monitoring (production lines, Industry 4.0)
- ▶ critical infrastructure (e.g. energy networks, telecommunications)
- ▶ backup data centers
- ▶ data centers in challenging environments (e.g. industrial areas, historical buildings)
- ▶ mobile data center solutions



Why choose

BKT MicroDC Modular Rack?

Tailored solution each project begins with a needs analysis, followed by system selection and design – resulting in a solution fully customized to your requirements.

- ▶ **Prefabricated product** - You receive a fully equipped and pre-configured system – ready for operation immediately after installation.
- ▶ **Designed modularity** - Many components can be easily modified and arranged in multiple configurations, allowing flexible implementation (e.g. cable routing and layout customization).
- ▶ **System reliability** - Configuration compliant with EN50600, supported by monitoring, alerting systems, and built-in redundancy.
- ▶ **Security** - Advanced monitoring and management systems with remote access capabilities.
- ▶ **Energy efficiency** - Optimized to reduce power consumption (e.g. precision cooling and environmental control).

BKT MicroDC Modular Rack

Key Components

BKT iROW DX/CW
cooling system



BKT inCAB M IP54
server cabinet



BKT ACS access
control system





FRS-Rack 3 fire detection and suppression system

BKT SM4DC monitoring and visualization system



SysBKT EMS environmental monitoring system



BKT BPS2000 / MSPDU Type D power distribution system

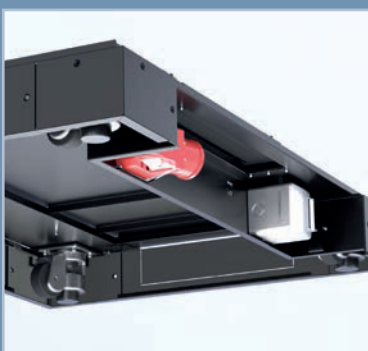
BKT Micro Data Centers MicroDC Modular Rack



Touchscreen with interface of the BKT SM4DC monitoring and visualization system



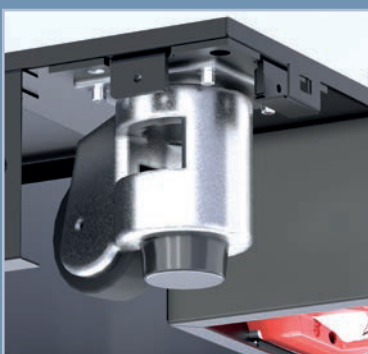
Cable ladder system enabling free routing of cabling inside the cabinet



Innovative, multifunctional, removable plinth



Modular floor ensuring free configuration of cable entries



Integrated transport system for easy movement

Example configurations



1 × BKT inCAB M cabinet
1 × BKT iROW air conditioner

2 × BKT inCAB M cabinets
2 × BKT iROW air conditioners



3 × BKT inCAB M cabinets +
2 × BKT iROW air conditioners

4 × BKT inCAB M cabinets +
3 × BKT iROW air conditioners





BKT inCAB M Server Cabinet

An advanced solution designed for protecting IT equipment in demanding environmental conditions.

It is characterized by a high IP54 protection rating, which means resistance to dust and moisture. This level of protection also enables separation of the internal air circulation, which ensures high efficiency of the cooling system.

The InCAB IP54 cabinet, made in frame technology, guarantees solidity and durability, and its construction allows safe installation of various server and network equipment. Integrated seals and locking systems increase the level of protection against external factors. Thoughtful modularity meets diverse user needs.

Parameter	Value
Height / Usable height	44U / 42U
Dimensions (W × D × H)	800 × 1200 × 2094 mm
Construction	Welded frame
Load capacity	1800 kg
Protection rating	IP54
Floor	Modular with IP54 cable entries
Plinth	Modular, fully removable
Plinth accessories	Spaces with connection sockets
Roof	Prepared for cooling unit installation
Front door	Single-leaf, glazed, with monitor space and handle
Rear door	Double-leaf, solid
Door accessories	Automatic opening / ventilation system
Side panels	Solid with structural reinforcements
Accessories	Horizontal cable ladder, 1200 mm Vertical split cable ladder, 44U Vertical full cable ladder, 150 mm Veni Box enclosure for electronic devices Vertical blanking panels, 44U (3 × 2U perforation) with sealing kit

BKT MicroDC iROW DX (Direct Expansion) and BKT MicroDC iROW CW (Chilled Water) precision air conditioning units are advanced cooling devices designed to maintain precisely defined temperature and humidity in MicroDC cabinet systems with the highest requirements.

The BKT iROW DX system has a built-in refrigeration circuit, which requires connection to an external condenser. These units may be equipped with a winter kit enabling operation in difficult climatic conditions or a free cooling module, which significantly improves the energy efficiency of the system.

The BKT iROW CW system does not have a built-in refrigeration circuit, but is equipped with a water heat exchanger supplied with technological cooling generated by a chiller and dry coolers. Thanks to its modular design, this system is easy to expand and flexibly adapts to the requirements of the IT infrastructure.

Model	110KMIDC07DX0.3 110KMIDC07DXH.3	110KMIDC12DX0.3 110KMIDC12DXH.3	110KMIDC21DX0.3 110KMIDC21DXH.3	110KMIDC31DX0.3 110KMIDC31DXH.3	110KMIDC33CW0.3 110KMIDC33CWH.3
Type	DX – direct expansion				CW – chilled water
Nominal capacity* [kW]	7,6	12,8	21,2	31,1	33,0
Airflow [m ³ /h]	2250	2400	4920	5800	4800
Number of fans	3	3	6	6	6
Refrigerant	R410a / R134a	R410a / R134a	R410a / R134a	R410a / R134a	woda lodowa
Ambient temperature [°C]	45 / 55	45 / 55	45 / 55	45 / 55	-
Power supply [VAC]	230 V / 50 Hz / 1 Ph	400 V / 50 Hz / 3 Ph	400 V / 50 Hz / 3 Ph	400 V / 50 Hz / 3 Ph	230 V / 50 Hz / 1 Ph
Width [mm]	300	300	300	300	300
Outdoor unit	air-cooled condenser				cooperation with AWL
Characteristics	Individual 7" LCD operator panel, draws warm air from the rear of the cabinet, blows cool air to the front of the cabinet, and allows for cooling, heating, dehumidification, and optional humidification.				

Note: models with suffix xxxH.3 indicate units with built-in humidifiers.

* For return temperature 37°C / 24% RH, DX – condensing temperature 45/55°C, CW – chilled water parameters 10/15°C



BKT SDE Power Distribution System

To ensure the reliable operation of MicroDC IT systems and Data Center infrastructure, monitoring power system operating parameters is crucial. In BKT's BPS and MSPDU series power strips, this is possible via the LCD display, web interface, and network communication protocols.

Depending on the power distribution system (PDU) used, monitoring is possible for each phase or each power outlet, ensuring control of power parameters not only for the entire PDU but also for each output outlet. It is crucial to monitor key electrical parameters, such as: supply voltage [V], current load [A], active power [kW], reactive power [kVAR], and apparent power [kVA], as well as control of active energy consumption [kWh] and apparent energy [kVAh], which allows access to basic information about power supply parameters.

Built-in energy meters provide information on actual electricity consumption from each socket or the entire strip, allowing you to continuously monitor energy consumption for the entire MicroDC cabinet or for individual devices, which seems crucial in managing energy consumption for IT systems.

BKT BPS2000 vertical monitoring strips

Variant	Power Supply	Rated Current	Rated Power	Connector	Nests	
	1f / 3f	A	kW		C13	C19
B20V.d18c6.43301Av2	1f	16	3,7	Plug IEC60309	18	6
B20V.d18c6.44301Av2	1f	32	7,4	Plug IEC60309	18	6
B20V.d21c3.43301Av2	1f	16	3,7	Plug IEC60309	21	3
B20V.d21c3.44301Av2	1f	32	7,4	Plug IEC60309	21	3
B20V.d30c3.44301Av2	1f	32	7,4	Plug IEC60309	30	3
B20V.d18c6.45301Av2	3f	16	11	Plug IEC60309	18	6
B20V.d18c6.46301Av2	3f	32	22	Plug IEC60309	18	6
B20V.d21c3.45301Av2	3f	16	11	Plug IEC60309	21	3
B20V.d21c3.46301Av2	3f	32	22	Plug IEC60309	21	3
B20V.d30c3.46301Av2	3f	32	22	Plug IEC60309	30	3

BKT MSPDU type D vertical power strips

Variant	Power Supply	Rated Current	Power Cable	Circuit Breakers	Length	Nests	
	1f / 3f	A	type	type	mm	C13	C19
MSDv.e18c6.443F2A0	1f	32	3 × 6 mm ² , 3 m	2 × 16 A	1829	18	6
MSDv.e18c6.443N2A0	3f	3 × 32	5 × 6 mm ² , 3 m	6 × 16 A	1829	18	6
MSDv.d36c6.443F2A0	1f	32	3 × 6 mm ² , 3 m	2 × 16 A	1829	36	6
MSDv.d36c6.463N2A0	3f	3 × 32	5 × 6 mm ² , 3 m	6 × 16 A	1829	36	6

BKT EMS

Environmental Monitoring System

Ensuring proper operating conditions for electronic devices installed inside a MicroDC cabinet is demanding, especially in such a small cubic capacity and with high heat emissions. This task, performed by the cooling system, is additionally monitored by temperature and humidity sensors placed in key areas of the cabinet, i.e., at the front and rear, and at various heights. The air conditioning chamber also houses a flood sensor that responds to excessive condensation or leakage from the cooling system. The environmental conditions monitoring system is responsible for monitoring these sensors.

The system continuously reads sensor values and compares them with alarm thresholds set by the administrator. This allows the user to be notified of exceeding warning values (indicating a potential malfunction) or alarm values (indicating an emergency situation). The user can be notified by email, text message, or through a superior system (e.g., SM4DC) using the SNMP protocol.

The BKT EMS system offers more options, which you can read about at www.bkte.pl/bkt-ems.

Name	Description
Product	BKT EMS EC335t
Flood Sensors	Point sensor under each air conditioner
Temperature and humidity sensors	Front Temperature, 1/3 Height; Front Temperature, 2/3 Height; Back Temperature, 1/3 Height; Back Temperature, 2/3 Height; Front Humidity, 1/3 Height; Front Humidity, 2/3 Height; Front Dew Point, 1/3 Height; Front Dew Point, 2/3 Height
Notifications	Email, SMS, SNMP TRAP, physical visual indicator
Interfaces	Web, SNMP v1, v2c, v3, CAN
Event Archiving	on SDHC card



BKT ACS Access Control System

Physical access to the cabinet can be secured with a key lock or an electronic access control system. A cabinet equipped with such a system has an electrically controlled handle, an RFID proximity card reader and a keypad enabling PIN code entry. The solution uses components from Roger (Assa Abloy), which enables easy integration with this building system.

Access rights to the cabinet can be assigned to a specific group of users within a defined time range. A user can be assigned a card and/or a PIN code. Opening or attempted opening of the cabinet will be recorded in the event log along with information about the user, and the time of opening and closing of the cabinet doors. More information about the BKT ACS access control system is available at: www.bkte.pl/bkt-ac

Photo	Description	Index
	AC100 - Access controller in a 1U 19" housing without a power supply or controller PCB. Designed to support readers with an RS485 interface. • Requires installation of a Roger MC16-PAC-ST-x controller PCB. Depending on the controller PCB used, it can support from 1 to 16 doors (MC16-PAC-ST-1 - MC16-PAC-ST-16). • The controller is housed in a 1U housing, suitable for mounting in a 19" rack. • The number of controllers in the system is unlimited. • The controller allows for the connection of two door sensors, two door readers, an additional reader for the kiosk's sliding doors, a LAN, and an RS485 bus connecting subsystems. All connections to the controller are made using cables with RJ45 connectors. • The controller has two configurable LEDs, which can, for example, indicate the status of the cabinet's front and rear doors. • Dual-power supply is possible. Requires one or two 12 V DC 1.5 A power supplies. • Dimensions: 482 × 132 × 44 mm (W × D × H).	122AC001000
Door controller		
	MC16-PAC-ST-xx - Controller PCB for xx (1-16) doors, for systems up to 128 doors. • Depending on the version, it allows for control of 1 to 16 doors (MC16-PAC-ST-1 - MC16-PAC-ST-16). • By using multiple MC16-PAC-ST-xx boards, systems with up to 128 doors can be built. • Dimensions: 175 × 72 × 30 mm (W × D × H).	122AC1021xx



Photo	Description	Index
Sensor		
	AR121 (MCT12E-IO) - Unique 125 kHz card reader with keypad for cabinet door control. • The Roger MCT12E-IO reader is used, adapted for cabinet door control. • It has a 15 cm cable terminated with multi-pin connectors for connecting the door handle and cabinet controller. • Reads EM Unique 125 kHz cards, read range up to 7 cm, 3 LED indicators, a buzzer with adjustable volume, a backlit keypad, two function buttons, and detection of enclosure opening and removal from the base. • Power supply: 12V, 50 mA from the AC100 controller or the AB101 slave kit. • Dimensions: 153 × 46 × 23 mm (H × W × D).	244AR001210
	AR131 (MCT12M-IO) - Mifare 13.56 MHz card reader with keypad for cabinet door control. • The Roger MCT12M-IO reader is used, adapted for cabinet door control. • It has a 15 cm cable terminated with multi-pin connectors for connecting the door handle and cabinet controller. • Reads Mifare Ultralight and Classic 13.56 MHz cards, reads up to 7 cm, features 3 LED indicators, a loudspeaker with adjustable volume, a backlit keypad, 2 function buttons, and detects opening and removal from the base. • Power supply: 12 V, 85 mA from the AC100 controller or the AB101 slave kit. • Dimensions: 153 × 46 × 23 mm (H × W × D).	244AR001310
Handle		
	ALAL201 - electrically controlled and monitored cabinet handle with key opening201 • Mounts in a standard 150 × 25 mm opening. • Suitable for single- and multi-point locking systems. • LED opening indication, handle status monitoring, and the ability to transmit information to the access control system. • Key opening in the event of a power outage; cylinders available with a master key system. • Maximum current consumption during lock operation: 180 mA • Handle quiescent current: 30 mA • Dimensions: 212 × 47 × 48 mm (H × W × D).	122AL002010
Analog sensors		
	AD101 - reed switch sensor for single-leaf doors with a 5 m cable. • Normally open (NO) sensor, operating range: 10 mm. • 5 m cable terminated with an RJ45 plug for connection to the controller. • Includes a mounting bracket for fixing the reed switch to the cabinet frame and a magnet with double-sided adhesive tape. • Dimensions of the magnet and sensor without the bracket: 23 × 14 × 6 mm (L × W × H).	244AD001010
	AD102 - reed switch sensor for double-leaf doors with a 5 m cable. • Normally open (NO) sensors, operating range: 10 mm. • 5 m cable terminated with an RJ45 plug for connection to the controller. • Includes 2 mounting brackets for fixing the reed switches to the cabinet frame and 2 magnets with double-sided adhesive tape. • Dimensions of the magnet and sensor without the bracket: 23 × 14 × 6 mm (L × W × H).	244AD001020



FRS-Rack 3

Fire Detection and Suppression System

An autonomous, fully automated system designed for early fire detection and suppression. It is intended for local fire protection of sealed server cabinets and other high-tightness 19-inch enclosures.

The system consists of a fully equipped automatic early fire detection system, a control, monitoring, communication, and extinguishing unit.

Parameter	Value
Product	FRS-Rack 3
Height	1U (483 × 44.5 × 603 mm)
Required clearance below unit	200 mm
Extinguishing agent	Novec FK-5-1-12
Operating temperature range	+5°C to +45°C
Protected volume	2 m ³
Other characteristics	2 x optical smoke sensors; 2 x temperature sensors; 1 x door sensor; 2 x emergency power supply with a 2-year lifespan; IP 20

MicroDC SM4DC

Monitoring and Visualization System



The SM4DC (System Manager for Data Center) software is used for visualization of statuses and monitoring of devices installed in MicroDC cabinets. System Manager integrates all BKT system solutions for Data Center.

It enables clear, efficient and secure management (monitoring and control) of the IT infrastructure installed in the facility. The role of SM4DC is to minimize the risk of downtime or failure.

Name	Description
Number of supported variables	up to approx. 2000
Alarm types	4 levels: informational, warning, dangerous, critical
Integration	PDU, ATS, air conditioners, EMS, EPR, UPS
Operating system	Windows
Interface type	multiuser / open
Communication protocols	SNMP, Modbus TCP/IP, HTTP
Integration protocols	BACnet IP, HTTP, DNP3 IP, DNP3 serial



Table of operating scenarios for an example configuration of BKT MicroDC Modular Rack

Event	Detection method	Response
Exceeding the warning value of any monitored parameter	Reading value from EMS or PDU system sensor	Automatic notification of designated recipients via e-mail or SMS
Exceeding the alarm value of any monitored parameter	Reading value from EMS or PDU system sensor	Automatic notification of designated recipients via e-mail or SMS
Failure of a single air conditioner	Reading status information from the air conditioner	Automatic notification of designated recipients via e-mail or SMS; takeover of operation by the redundant unit
Failure of two air conditioners	Simultaneous exceeding of the alarm threshold for a defined temperature sensor and reading values from both temperature sensors at the cooled air inlets indicating lack of operation of both air conditioners	Automatic notification of designated recipients via e-mail or SMS
Power failure on one line	Parameter value provided by the PDU	Automatic notification of designated recipients via e-mail or SMS
Flooding under the cabinets	Reading value from EMS system sensor	Automatic notification of designated recipients via e-mail or SMS



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